

BASF Aktiengesellschaft

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We claim:

- 5 1. A DNA construct with a plant V-ATPase promoter or
its functional equivalent, operatively linked with
a heterologous gene.
- 10 2. A DNA construct as claimed in claim 1, wherein the
plant V-ATPase promoter is a deleted or hybrid
V-ATPase promoter.
- 15 3. A DNA construct as claimed in claim 1 ~~or 2~~,
wherein the plant V-ATPase promoter is derived
from dicotyledonous plants.
- 20 4. A DNA construct as claimed in claim 1 ~~or 2~~,
wherein the plant V-ATPase promoter is derived
from monocotyledonous plants.
- 25 5. A DNA construct as claimed in claim 3 ~~or 4~~,
wherein the plant V-ATPase promoter is derived
from sugar beet, tobacco, barley, rice, potatoes,
sunflowers, soya, tomatoes, Canola, wheat, oilseed
rape, sorghum, carrots, maize, *Mesembrianthemum*
crystallinum or *Arabidopsis thaliana*.
- 30 6. A DNA construct as claimed in claim 1 ~~or 2~~,
wherein the plant V-ATPase promoter is the
promoter of *Beta vulgaris* V-ATPase subunit A
[SEQ ID No. 3], *B. vulgaris* V-ATPase subunit c
isoform 1 [SEQ ID No. 2], or *B. vulgaris* V-ATPase
subunit c isoform 2 [SEQ ID No. 1].
- 35 7. A DNA construct as claimed in ^{claim 1} ~~any of claims 1 to~~
6, which encompasses a second promoter which can

be regulated in a different manner than the first promoter.

8. A DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 7~~, wherein at least one further pyrimidine stretch is inserted in the promoter.

9. A DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 8~~, which is an expression cassette.

10. A DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 9~~, wherein the heterologous gene is a selection marker or a resistance-mediating gene or a gene of other medicinal, agronomical or other interest.

11. A polynucleotide encompassing the sequence of the promoter of *B. vulgaris* V-ATPase subunit c isoform 2 [SEQ ID No. 1] or its functional equivalent.

12. The polynucleotide as claimed in claim 11, encompassing the sequence of a deleted or hybrid *B. vulgaris* V-ATPase subunit c isoform 2 promoter [SEQ ID No. 1] or its functional equivalent.

13. A recombinant vector which encompasses a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~.

14. A recombinant vector as claimed in claim 13, which is a shuttle vector.

15. A recombinant vector as claimed in claim 13 ~~or 14~~, which is an expression vector.

16. A microorganism which is transformed with a recombinant vector as claimed in ^{claim 13} ~~any of claims 13 to 15~~.

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17. A transgenic plant cell or protoplast whose genome encompasses a DNA construct as claimed in ~~any of~~ ^{claim 1} ~~claims 1 to 10~~.
- 5 18. A transgenic plant cell or protoplast as claimed in claim 17 derived from a monocotyledonous plant.
19. A transgenic plant cell or protoplast as claimed in claim 17 derived from a dicotyledonous plant.
- 10 20. A transgenic plant whose genome encompasses a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~.
21. A transgenic plant as claimed in claim 20, which is a monocotyledonous plant.
- 15 22. A transgenic plant as claimed in claim 20, which is a dicotyledonous plant.
- 20 23. A transgenic plant as claimed in claim 21 ~~or 22~~, which is sugar beet, tobacco, barley, rice, potato, sunflower, soya, tomato, Canola, wheat, oilseed rape, sorghum, carrot, maize, *Mesembrianthemum crystallinum* or *Arabidopsis thaliana*.
- 25 24. A method for the controlled expression of a heterologous gene in a plant cell or a protoplast, which comprises
- 30 transforming the cell or the protoplast with a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~ and subsequently exposing the transformed cell or the protoplast to such a biotic or abiotic stress that the expression of the heterologous gene which
- 35 has been transformed by means of the DNA construct is controlled.

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25. The method as claimed in claim 24, wherein the plant cell or the protoplast is derived from a monocotyledonous plant.
- 5 26. The method as claimed in claim 24, wherein the plant cell or the protoplast is derived from a dicotyledonous plant.
- 10 27. The process as claimed in claim 25 or ~~26~~, wherein the plant cell or the protoplast is derived from sugar beet, tobacco, barley, rice, potatoes, sunflowers, soya, tomatoes, Canola, wheat, oilseed rape, sorghum, carrots, maize, *Mesembranthemum crystallinum* or *Arabidopsis thaliana*.
- 15 28. A method for the controlled expression of a heterologous gene in a plant, which comprises regenerating cells or protoplasts transformed with a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~ to give rise to a transgenic plant and subsequently exposing the plant transformed in this way to such a biotic or abiotic stress that the expression of the heterologous gene which has been transformed by means of the DNA construct is controlled.
- 20 29. The method as claimed in claim 28, wherein the transgenic plant is a monocotyledonous plant.
- 30 30. The method as claimed in claim 28, wherein the transgenic plant is a dicotyledonous plant.
- 35 31. Method as claimed in claim 29 or ~~30~~, wherein the transgenic plant is sugar beet, tobacco, barley, rice, potato, sunflower, soya, tomato, Canola, wheat, oilseed rape, sorghum, carrot, maize, *Mesembranthemum crystallinum* or *Arabidopsis thaliana*.

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32. A method for producing a recombinant protein, which comprises transforming a plant cell or a protoplast with a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~ and subsequently exposing the transformed cell or the protoplast to such a biotic or abiotic stress that the recombinant protein transformed by means of the DNA construct is expressed.
33. The method as claimed in claim 32, wherein the plant cell or the protoplast is derived from a monocotyledonous plant.
34. The method as claimed in claim 32, wherein the plant cell or the protoplast is derived from a dicotyledonous plant.
35. The process as claimed in claim 33 ~~or 34~~, wherein the plant cell or the protoplast is derived from sugar beet, tobacco, barley, rice, potatoes, sunflowers, soya, tomatoes, Canola, wheat, oilseed rape, sorghum, carrots, maize, *Mesembranthemum crystallinum* or *Arabidopsis thaliana*.
36. A method of producing a recombinant protein in a plant, which comprises regenerating cells or protoplasts transformed with a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~ to give rise to a transgenic plant and subsequently exposing the resulting transgenic plant to such a biotic or abiotic stress that the recombinant protein transformed by means of the DNA construct is expressed.
37. The method as claimed in claim 36, wherein the transgenic plant is a monocotyledonous plant.
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38. The method as claimed in claim 36, wherein the transgenic plant is a dicotyledonous plant.
39. Method as claimed in claim 37 ~~or 38~~, wherein the transgenic plant is sugar beet, tobacco, barley, rice, potato, sunflower, soya, tomato, Canola, wheat, oilseed rape, sorghum, carrot, maize, *Mesembranthemum crystallinum* or *Arabidopsis thaliana*.
40. The use of a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~ for producing a recombinant protein in a plant cell or a protoplast.
41. The use of a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~ for producing a recombinant protein in a plant.
42. A recombinant protein prepared as claimed in ^{claim 32} ~~any of claims 32 to 39~~.
43. The use of a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~ for expressing a gene in a plant under biotic or abiotic stress.
44. The use of a plant V-ATPase promoter for expressing a gene in a plant under biotic or abiotic stress.
45. The use as claimed in claim 44, wherein the plant V-ATPase promoter is a deleted or hybrid V-ATPase promoter.
46. The use as claimed in claim 45, wherein the plant V-ATPase promoter is derived from dicotyledonous plants.

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47. The use as claimed in claim 45, wherein the plant V-ATPase promoter is derived from monocotyledonous plants.

48. The use as claimed in claim 46 or ~~47~~, wherein the plant V-ATPase promoter is derived from sugar beet, tobacco, barley, rice, potatoes, sunflowers, soya, tomatoes, Canola, wheat, oilseed rape, sorghum, carrots, maize, *Mesembranthemum crystallinum* or *Arabidopsis thaliana*.

49. The use according to claim 44 or ~~45~~, wherein the plant V-ATPase promoter is the promoter of *Beta vulgaris* V-ATPase subunit A [SEQ ID No. 3], *B. vulgaris* V-ATPase subunit c isoform 1 [SEQ ID No. 2], or *B. vulgaris* V-ATPase subunit c isoform 2 [SEQ ID No. 1].

50. The use as claimed in ^{claim 44} ~~one of claims 44 to 49~~, wherein at least one further pyrimidine stretch is inserted into the promoter.

51. A plant cell or protoplast which is transformed with a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~ and which is resistant to biotic or abiotic stress.

52. A plant cell or protoplast which is transformed with a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~ and which is resistant to salt stress.

53. A plant which is transformed with a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~ and which is resistant to biotic or abiotic stress.

54. A plant which is transformed with a DNA construct as claimed in ^{claim 1} ~~any of claims 1 to 10~~ and which is resistant to salt stress.

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